

WE CLAIM:

- 1 1. A method of fabricating a Bragg reflector comprising:
2 forming at least one structure layer and at least one sacrificial layer in alternating
3 relation on a substrate;
4 [etching the structure and sacrificial layers into at least one mesa protruding from the
5 substrate;]
6 forming a support layer on the at least one mesa leaving a portion of the structure and
7 the sacrificial layers exposed; and
8 [etching at least a portion of at least one of the exposed sacrificial layers to form a gap.]
- 1 2. The method of claim 1 wherein forming a support layer on the at least one
2 mesa comprises masking a portion of the mesa to prevent deposition of the support layer on
3 the portion of the mesa.
- 1 3. The method of claim 2 wherein forming a support layer is depositing the
2 support layer in a chemical vapor deposition process and wherein the mask is a dielectric
3 mask.
- 1 4. The method of claim 1 wherein the material of the structure layer and the
2 material of the support layer comprise substantially the same material.

5. The method of claim 1 wherein the structure layer material is different than a sacrificial layer material, and wherein etching at least a portion of at least one of the exposed sacrificial layers comprises etching the sacrificial layers without substantially etching the structure layers.

6. The method of claim 5 wherein etching further comprises etching without substantially etching the support layer.

7. The method of claim 1 wherein the at least one mesa has a sidewall, and wherein forming a support layer on the at least one mesa comprises forming the support layer on at least a portion of the sidewall.

8. The method of claim 1 wherein the sacrificial layer comprises a material selected from the group consisting of InGaAs, AlAs, and SiO₂ and the structure layer comprises a material selected from the group consisting of InP, GaAs, and Si.

9. The method of claim 8 wherein the support layer comprises a material selected from the group consisting of InP, GaAs, and Si.

10. The method of claim 1 further comprising doping at least a portion of the support layer to create an electrically conductive path.

1 11. The method of claim 1 further comprising doping at least a portion of the
2 support layer to make at least the portion of the support layer electrically non-conductive.

1 12. A Bragg reflector comprising:
2 one or more first layers adjacent one or more second layers, the first and second layers
3 having at least one sidewall, [wherein the first and second layers define one or more gaps;] and
4 a support layer formed over at a least portion of the sidewalls to support the second
5 layers against intrusion into the one or more gaps.

1 13. The Bragg reflector of claim 12 wherein the second layers and the support
2 layer comprise substantially the same material.

1 14. The Bragg reflector of claim 12 wherein at least a portion of the support layer
2 is electrically conductive.

1 15. The Bragg reflector of claim 12 wherein at least a portion of the support layer
2 is electrically non-conductive.

1 16. A distributed Bragg reflector comprising:
2 [a substrate;] no alt.
3 a plurality structure layers on the substrate each spaced apart by [a gap;] the
4 structure layers each having edges; and
5 a support layer about a portion of the edges for supporting the structure layers.

1 17. The distributed Bragg reflector of claim 16 further comprising sacrificial
2 layers between the structure layers, the sacrificial layers undercut to define the gaps.

1 18. The distributed Bragg reflector of claim 16 wherein the support layer
2 comprises a material selected from the group consisting of InP, GaAs, and Si.

1 19. The distributed Bragg reflector of claim 16 wherein the structure layers
2 comprise a material selected from the group consisting of InP, GaAs, Si.

1 20. The distributed Bragg reflector of claim 16 wherein the support layer covers at
2 least a portion of a top of the structure layers.